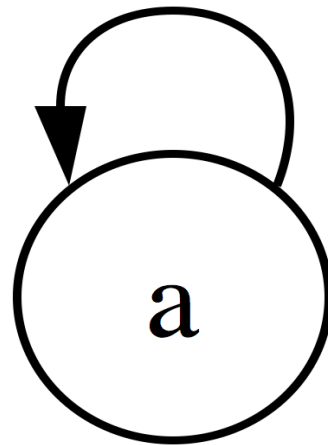


Massive Open Online Coding: Exploring the role of **MOOCs** for post-primary computing education in Ireland



Eamon Costello, Mark Brown, Monica Ward, Enda Donlon, Deirdre Butler
Dublin City University

16th June 2016 – Science and Mathematics Education Conference, Dublin

New Kid on the Block

The National Council of Teachers of Mathematics	1920
The National Association for Research in Science Teaching	1928
ACM's Special Interest Group in CS Education	1970
Computer Science Teacher Association	2004
International Computing Education Research Workshop	2005
<i>Koli Calling</i> Conference on Computing Education	2001

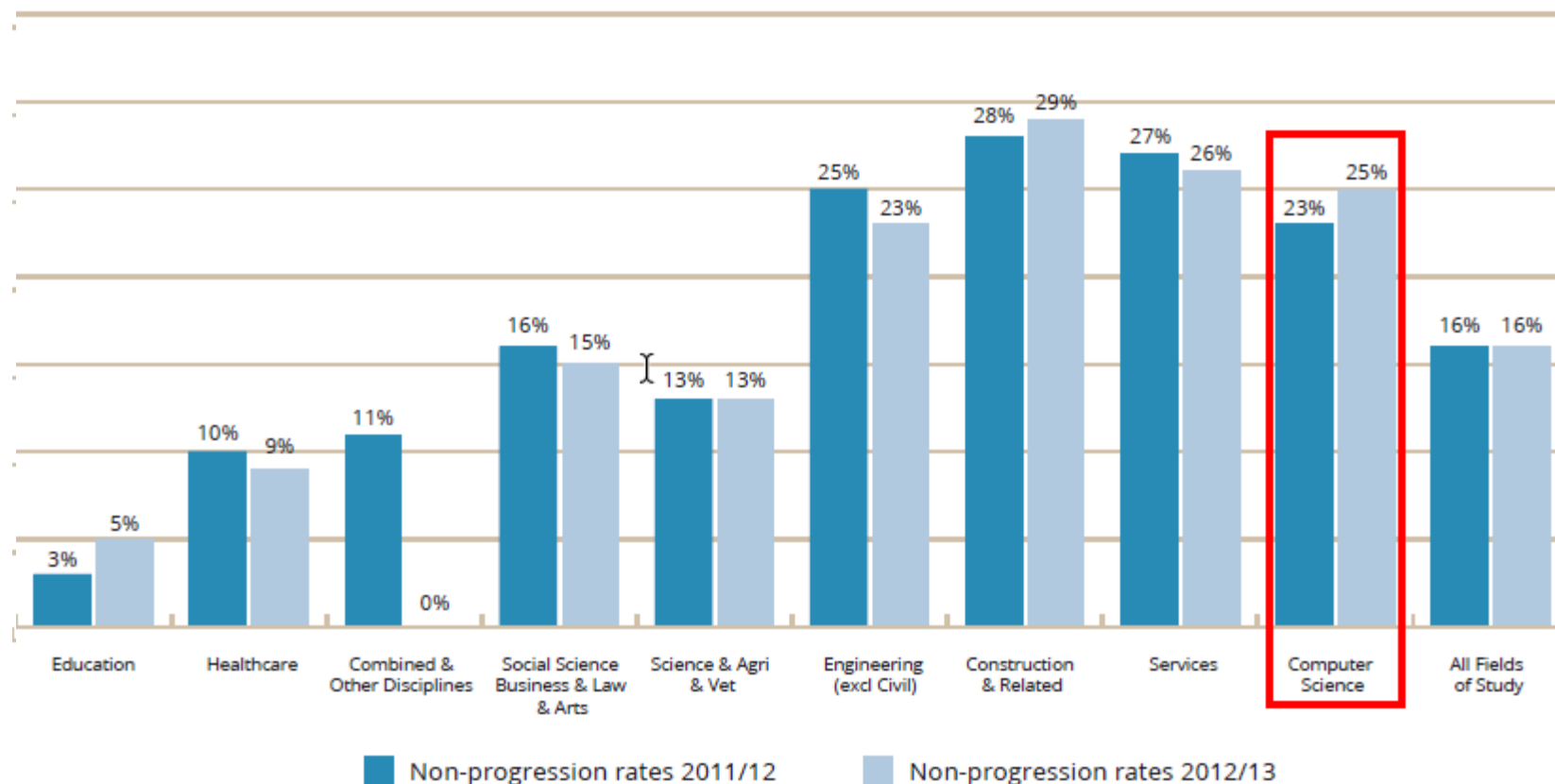
Three Paradigms

“Is Computer Science a branch of mathematics, an engineering discipline or a natural science? Should knowledge about the behaviour of programs proceed deductively or empirically? Are computer programs on a par with mathematical objects, with mere data, or with mental processes?” (Eden, 2007)

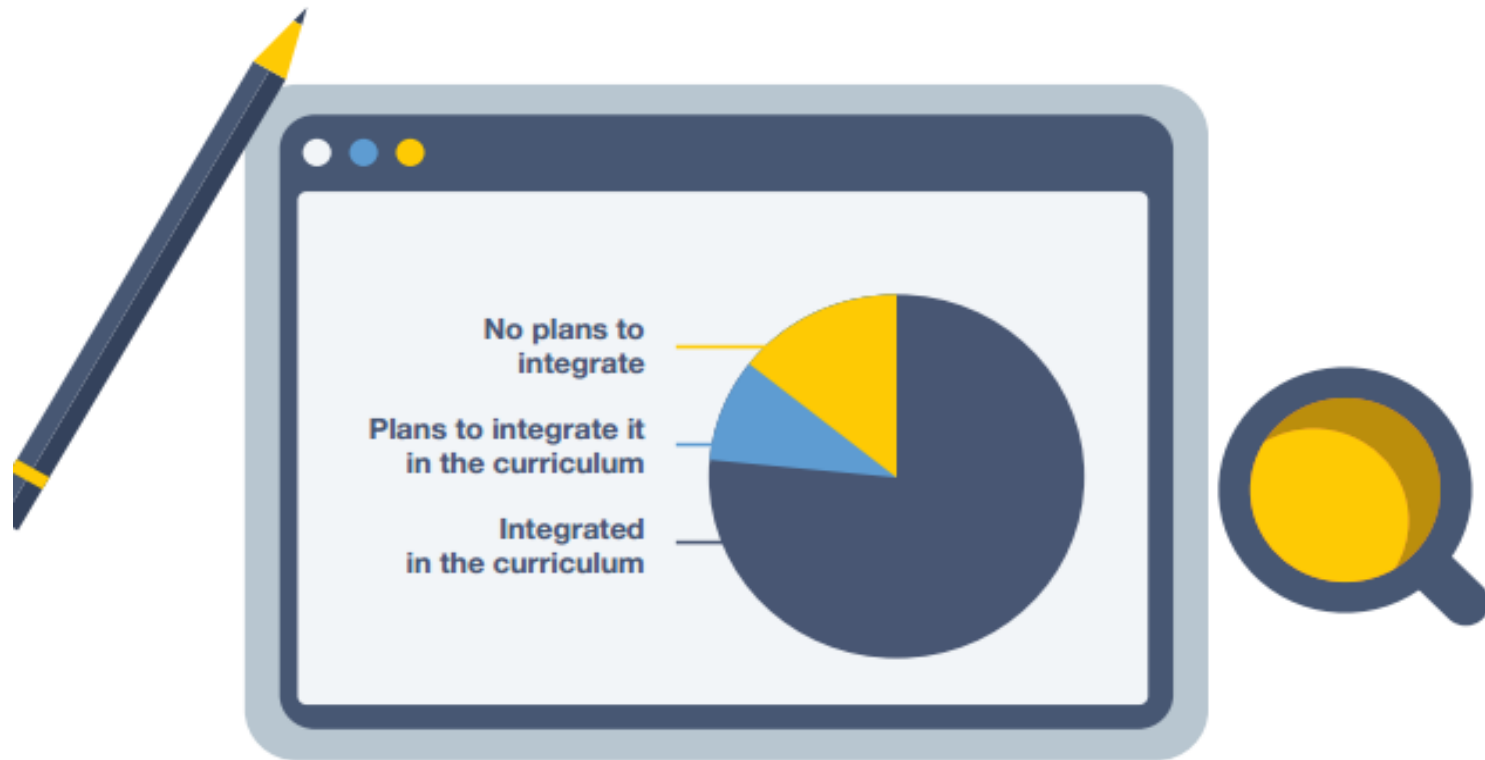
- **Rationalist**
- **Technocratic**
- **Scientific**

Local Contexts

Non-Progression Rates by Field of Study 2011/12 v's 2012/13



Computing at post-primary level



AUSTRIA, BULGARIA, THE CZECH REPUBLIC, DENMARK, ESTONIA, FRANCE, HUNGARY, IRELAND, LITHUANIA, MALTA, SPAIN, POLAND, PORTUGAL, SLOVAKIA, THE UK (ENGLAND), ISRAEL

BELGIUM FLANDERS, FINLAND

BELGIUM WALLONIA, NETHERLANDS, NORWAY

Balanskat, A. and Engelhardt, K., `2014). *Computing Our Future: Computer Programming and Coding-Priorities, School Curricula and Initiatives Across Europe*. European Schoolnet, Brussels, Belgium.

Computing Education in Ireland

September 2016

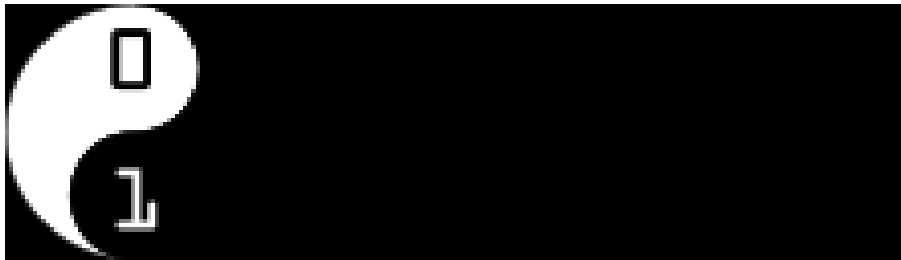
Short Course Coding

Expectations for students

- 10 **Strand 1:** Computer science introduction
- 11 **Strand 2:** Let's get connected
- 12 **Strand 3:** Coding at the next level
- 13 **Strand 4:** Problem solving in the real world

Specification for Junior Cycle

Computing Education in Ireland



Coder-Dojos

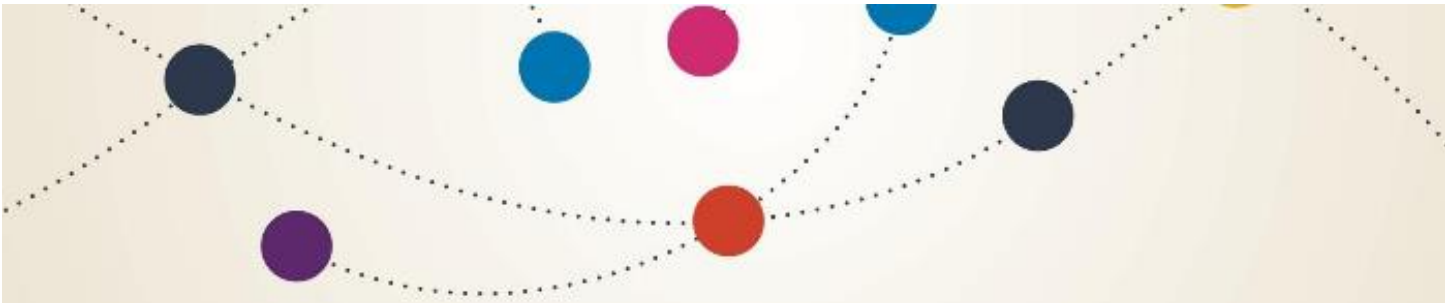
Problems of the Co-curriculum

Computing Education in Ireland

- DCU - Programming Olympiad, Outreach - TY
- DCU - Google project with Irish Schools
(Ward & McGuire, 2016)
- BSc. in Information Technology online



What is Next?

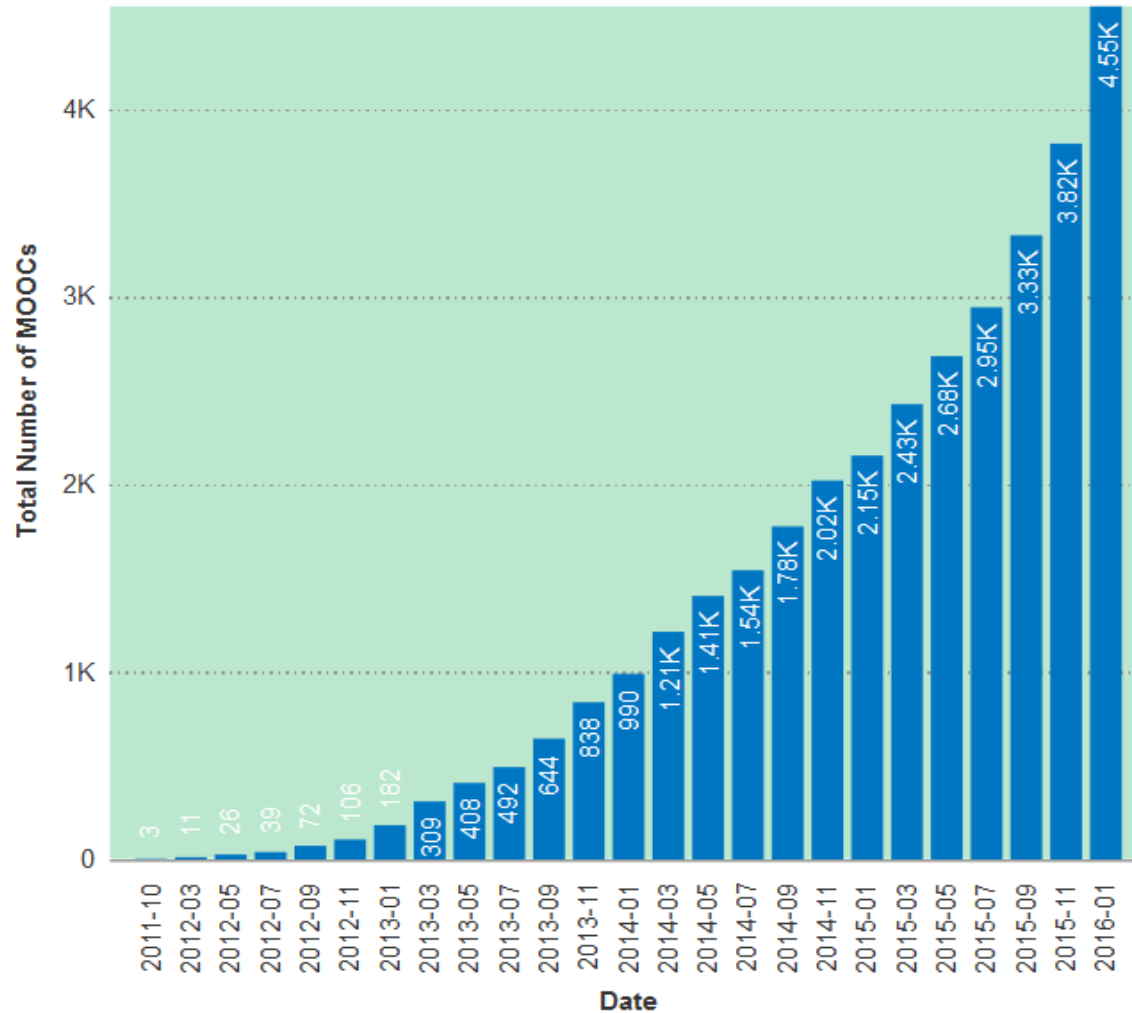


ICT courses in Upper Second Level Education

Request for Tender for Research on International
Practice

May 2016

MOOCs: Rising or Falling?



<http://www.onlinecoursereport.com/state-of-the-mooc-2016-a-year-of-massive-landscape-change-for-massive-open-online-courses/>

MOOCs at DCU

- Research
- Development



National Institute
for Digital Learning



21 Century Learning Design

OneNote



Home Insert Draw View Table

B I U [List Icon] [Checkmark Icon]

Camera Picture

21 CLD Introduction Collaboration Skilled Communication Knowledge Construction Self-Regulation ICT for Learning Real-World Problem Solving

21CLD readings

- What is 21CLD?**
Students around the world need advanced skills to succeed in the globalized, knowledge based world of...
- The 21CLD curriculum**
Introduction
Transforming education by focusing on 21st century skills is one of Microsoft's...
- 21CLD educator profile...**
Introduction
Microsoft Expert Educators around the world were...

- 21CLD anchor lessons**
Throughout the 21CLD curriculum, you will be introduced to what we call anchor lessons. These are used to exemplify...
- 21CLD readings**
ITL Research 2011 Findings and Implications
21CLD is based on the international [Innovative Teaching and Learning \(ITL\) Research](#) models of professional development (embedded in teaching practice, collaborative school leaders, and ongoing).
Online: <http://www.itlresearch.com/images/stories/reports/ITL%20Research%202011%20Findings%20and%20Implications.pdf>
- Redesigning Education: Meeting the Challenges of the 21st Century**
This discussion paper authored by the Pili Network was written to facilitate discussion about how we might redesign education.
Online: <http://www.pil-network.ie/docs/default-source/discussion-paper-re-designing-education-meeting-the-challenges-of-the-21st-century.pdf>
- Office Mix**
Gallery My Mixes
21CLD Course 2 Lesson 3 Slide 15


Activity



For discussion

What code did you assign House on Mango?

What evidence can you point to in order to substantiate your decision?

“The problem that MOOCs are actually solving, therefore, is **how to provide free education to highly qualified professionals** – not a problem anyone had previously thought to identify...”
(Laurillard, 2016a)

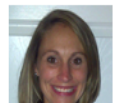
K-12 Teaching in the 21st Century

About the Facilitators



Dr. Rick Ferdig
Summit
Professor of

Educational Technologies
Research Center for
Educational Technology
Kent State University



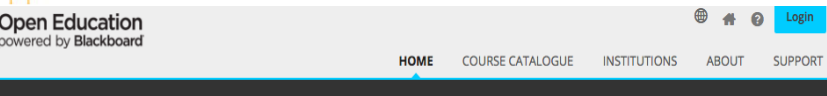
Dr. Kristy Pytash



Open Education
powered by Blackboard

This free course, *K-12 Teaching in the 21st Century*, was created for the Michigan Virtual University Summit in 2013. It was aimed at service teachers who were looking for 21st century tools for the classroom.

About the Course
What does it mean to be a teacher in the 21st century? This is a simple question with a complex answer. This course is reform oriented with a deeper understanding of emerging and free online artifact creation.



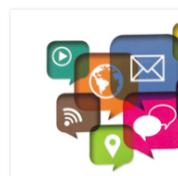
Teaching with Tablets (February-March 2016)

[The University of Northampton](#)

SHARE THIS COURSE: [Like](#) [Tweet](#) [G+](#)

Welcome to our **Teaching with Tablets** course. This is an interactive and participatory online course on how to make effective use of iPads and tablets for teaching and learning. Our course is aimed at educators across all levels, from Primary to Higher Education, from NQTs to experienced practitioners. Anyone with an interest in the field is very welcome.

It is a flexible online course that you can join in with at a pace and depth that suits you. We will suggest activities and ideas and encourage you to try them within your teaching. We would like you to leave each session with a new idea to try out in practice and then share your experiences on the Google+ community. In turn you can learn from the experiences and gain ideas from fellow professionals.



Course Details

Duration: Self-Paced
 Workload: Approximately 3 hours per week



[Catalog](#)



ICT in Primary Education: Transforming children's learning across the curriculum

Why and how are teachers integrating ICT (Information and Communication Technology) into primary education? In this course we analyse examples from schools in different parts of the world, and bring professional teachers, headteachers and policymakers together to share their best ideas and inspiring stories. The materials in the course are based on studies carried out for the UNESCO Institute of IT in Education, Moscow.

- “In CPD, we typically provide some form of updating on current issues and findings, invite participants to discuss and debate the application to their professional contexts, and then offer a certificate of attendance to put towards their professional development requirements. **It is a perfect fit with the capability and the demographic of the current MOOC...**” (Laurillard, 2016b)



Think. Create. Code

Empower yourself to create and control digital information, and gain the computational thinking skills to tackle our most complex problems.

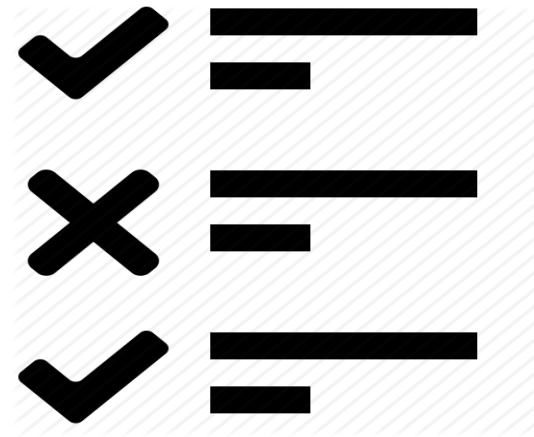


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MOOCs for K12 Computing Education

Finland - MOOCS as Semester Long Entrance Exam



Thank you

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